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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,521	08/20/2001	William Bell	1867-00202	7098

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EXAMINER

BISSETT, MELANIE D

ART UNIT	PAPER NUMBER
1711	6

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/933,521

Applicant(s)

BELL ET AL.

Examiner

Melanie Bagwell-Bissett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2002.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-19, 24 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-19, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 14-19 and 24-25 in Paper No. 5 is acknowledged.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 14 recites the limitation "the polymer according to claim 1" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

- (e) the invention was described in-
- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).
4. Claims 15 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Droege.

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5. Droege discloses open cell carbon foams made by pyrolyzing polyimide films, where the foams have densities of $300\text{-}900\text{ mg/cm}^3$ ($0.3\text{-}0.9\text{ g/cm}^3$), surface areas of $200\text{-}800\text{ m}^2/\text{g}$, and electrical capacitances of $10\text{-}80\text{ F/g}$ (col. 13 lines 50-59). In this case, it seems that the foams would have a volumetric capacitance of $3\text{-}72\text{ F/cm}^3$ (ex. $10\text{ F/g} \times 0.3\text{ g/cm}^3 = 3\text{ F/cm}^3$). Droege teaches the carbon foams as having pore sizes of $10\text{-}25\text{ nm}$ (col. 14 lines 2-4). Since the reference shows the carbon foams as useful in single applications and results from homogeneous mixtures, it is the examiner's position that Droege teaches monolithic structures (col. 12 lines 41-62). Additives such as metal fibers may also be included (col. 14 lines 49-65).

6. Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Firsich. Firsich (USPN 5,993,996-A) can be found on the applicant's Form PTO-1449.

7. Firsich discloses porous carbon monoliths having variable densities, surface areas of over $500\text{ m}^2/\text{g}$, electrical conductivities of about 25 S/cm , capacitances of over 200 F/g , where the carbon materials are made by carbonizing polymer powder/carbon powder blends (col. 2 line 49-col. 3 line 9). An example shows a carbon material having a density of 0.75 g/cc , electrical conductivity of 20 S/cm , and a surface area of $750\text{ m}^2/\text{g}$ (example 1). Pore sizes should be optimized for mesoporosity, where Firsich cites "mesoporosity" as having pore diameters of $20\text{-}100\text{ \AA}$ ($2\text{-}10\text{ }\mu\text{m}$) (col. 4 lines 50-53). Thus, the reference teaches carbon materials having densities of greater than 0.5 g/cc . It is noted that claim 14 does not specify a process, since claim 1 has been cancelled. However, it is the examiner's position that the resulting carbon monolith of Firsich's

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invention would have the same structure and composition as a carbon monolith of the applicant's claimed invention, as evidenced by the same properties.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 15-19 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Firsich in view of Droege.

10. Firsich applies as above for the carbon monolith materials. Carbon materials can be pressed to thickness of 15 mils to one inch (0.38-25.4 mm), suggesting monoliths having a dimension of greater than 2 mm. Firsich teaches carbon materials having capacitances of 120-180 F/g before further treatment and capacitances of 200-260 F/g after a sulfonation treatment (col. 7 lines 14-20). The capacitance of the carbon of example 1 is shown as 200-240 F/g. In this case, it seems the carbon material would have a volumetric capacitance of 150-180 F/cc. Since carbon powder having small particle diameters can be included in the polymer mixture to be carbonized (col. 6 lines 16-23), it is the examiner's position that the reference teaches the addition of high surface area powders. However, the reference does not suggest porous carbon materials having pore diameters greater than 10 μm .

11. Droege teaches mesoporous distributions as encompassing pore sizes of 5-50 nm, where a specified embodiment suggests pore sizes of 10-25 nm (col. 13 line 60-col. 14 line 4). Droege suggests that the mesopore size distribution serves to improve the formation of electrical double layer and increase in energy storage characteristics (col. 14 lines 5-14). Since Firsich teaches the use of mesoporous carbon monoliths and the desire for high energy storage characteristics (col. 2 lines 59-61), it is the examiner's position that it would have been prima facie obvious to form carbon materials having pore sizes greater than 10 nm to optimize energy storage characteristics and formation of electrical double layers.

12. Claims 15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan in view of Droege. Tan (USPN 5,925,408-A) can be found on the applicant's Form PTO-1449.

13. Tan discloses porous monolithic carbon films having a volumetric capacitance around 200 F/cc, a density between 0.7-1 g/cc, and a surface area greater than 1000 m²/g (col. 2 lines 8-14, lines 34-40). Aqueous and non-aqueous electrolytes are used to form a double layer capacitor (col. 1 lines 25-48). However, Tan teaches pore sizes of 6-15 Å (0.6-1.5 nm) (col. 2 lines 61-64). However, Droege has suggested that the mesopore size distribution, including pore sizes of 10-25 nm, serves to improve the formation of electrical double layer and increase in energy storage characteristics (col. 14 lines 5-14). Thus, it is the examiner's position that it would have been prima facie

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obvious to form carbon materials having pore sizes greater than 10 nm to optimize energy storage characteristics and formation of electrical double layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Bagwell-Bissett whose telephone number is (703) 308-6539. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

mdb
July 18, 2002



James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700